





# A·C·A·D·E·M·Y ON COMPUTERS

## NEWSLETTER 1

### Welcome to the ACADEMY ON COMPUTERS

You have now joined the microcomputer revolution! We are all becoming increasingly exposed to the use of computers in our daily lives—be it booking an airline reservation, paying a bill, or watching your children play video games. The ACADEMY ON COMPUTERS is a unique learning experience which introduces you to how computers work. The course is designed to provide you with this understanding through your participation in an informal, easy-to-learn educational format. It combines television viewing, informative reading, and hands-on computer activities. As a participant in the ACADEMY, you will gain the greatest benefit by following the course schedule as outlined below:

Week	First Watch "Bits and Bytes"		...Then Read The Academy On Computers Resource Book, Bits and Bytes Study Guide	...Then Compute Hands-on Manual Software Self-Test	...Then Complete
1	"Getting Started"		Forward, Chapter 1 Newsletter #1	Hands-On Manual Chapters 1 and 2 Software Self-test #1	
2	"Ready-Made Programs"		Chapter 2	Software Self-test #2	
3	"How Programs Work"		Chapter 3 	Hands-On Manual Chapter 3 Software Self-test #3	
4	"Storing Information"		Chapter 4 and Newsletter #2	Software Self-test #4	
5	"Communications Between Computers"		Chapter 5 	Hands-On Manual Chapter 4 Software Self-test #5	
6	"Computer Languages"		Chapter 6	Software Self-test #6	Questionnaire #1
7	"Computer Assisted Instruction"		Chapter 7	Hands-On Manual Chapter 5	
8	"Simulations and Games"		Chapter 8 and Newsletter #3	Software Self-test #7	
9	"Computer Graphics"		Chapter 9	Hands on Manual Chapter 6 Software Self-test #8	
10	"Computer Music"		Chapter 10	Software Self-test #9	
11	"Computers at Work"		Chapter 11	Hands-On Manual Chapter 7	
12	"What's Next?"		Chapter 12	Software Self-test #10	Questionnaire #2



# Optional Reading At Your Own Pace

The Academy recommends that you read **THE HOME USER'S GUIDE** for up-to-date information on buying and maintaining computer hardware and software.

The Academy recommends that you read **EDUCATIONAL APPLICATIONS FOR TEACHERS** for information on how to use computers in the classroom.

The Academy recommends that you read **CHOOSING EDUCATIONAL SOFTWARE** for information on how to review computer software.

## Software Switch

If you received ACADEMY software on cassette, and the computer to which you have access runs on disk, it is relatively easy to transfer your programs to disk. To find out how, consult the manual you received when you purchased your micro-computer.

If you received software that is different from the type that you requested when you registered for the ACADEMY, call your *hot line* number and an exchange for the correct software will be made.

If you have tried to run your software on a microcomputer and the disk or cassette does not function properly, your *hot line* expert can assist you in determining whether or not the software is defective. If the software is defective, a replacement will be shipped to you as fast as possible.

## Questionnaire Mailing Schedule

The Correspondence Envelope contains two questionnaires, two answer sheets, and two business reply envelopes. The questionnaires are designed to test your understanding of the ideas and information presented in the "Bits and Bytes" programs and the ACADEMY ON COMPUTERS RESOURCE BOOK. In order for us to respond quickly to your questionnaires, we ask that you comply with the following schedule for submitting your answer sheets.

### WEEK OF APRIL 8, 1984 (following program 12)—

Complete Questionnaire #2 and return Answer Sheet #2 in the business reply envelope provided for your convenience postmarked no later than *Sunday, April 22, 1984*.

### WEEK OF FEBRUARY 26, 1984 (following program 6)—

Complete Questionnaire #1 and return Answer Sheet #1 in the business reply envelope provided for your convenience postmarked no later than *Sunday, March 11, 1984*.

## The Academy Hot Line

The ACADEMY *hot line* has been made available to participants for assistance and information pertaining to the ACADEMY ON COMPUTERS "Bits and Bytes" television series and the ACADEMY courseware. As you work through the Hands-on Manual or the Self-tests or even as you read your "Bits and Bytes Study Guide," you may have a question. Our computer experts are willing and able to give assistance to ACADEMY participants on any technical or conceptual question that you might have. It is possible that your questions may stump our experts. But if that's the case, they will try to find out the answer and get back to you or refer you to another source as soon as possible. Please use this resource. It is one of the components of the ACADEMY that is interactive in the true sense of the word. Check your local public broadcasting station for the hours and telephone number of your ACADEMY *hot line*.

Responses will be sent to you within two weeks of the receipt of your answer sheets.

Certificates of Completion will be sent to all participants who complete both questionnaires.

**REMEMBER**—Please remember to write your *Registration Number* on the top of Answer Sheet #1 and Answer Sheet #2. Thank you.



# HOW TO WORK THROUGH THE ACADEMY ON COMPUTERS

If you are new to television courses, there are some helpful hints we can offer about how to study and to complete the course to your satisfaction.

## THE TELEVISION SERIES

The "Bits and Bytes" television series is the focal point of THE ACADEMY ON COMPUTERS. The 12 programs provide you with basic information about microcomputers, and highlight those theoretical elements that must be seen to be appreciated.

Study hints:

- Try to watch the programs without interruption or distraction. Each program is only 30 minutes long, and if your viewing is interrupted, you may lose the point or miss a critical scene.
- Resist the temptation to take detailed notes during a program. However, if you want to keep paper and pencil on hand, writing down a few key words and phrases may help you to remember important ideas.
- Take a few minutes at the end of each program to summarize what you have seen.

## THE PRINT MATERIALS

The *ACADEMY ON COMPUTERS RESOURCE BOOK* is designed to reinforce and further your knowledge of microcomputers, and complements the content of the television series.

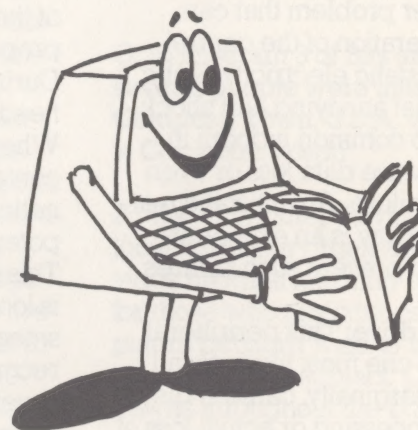
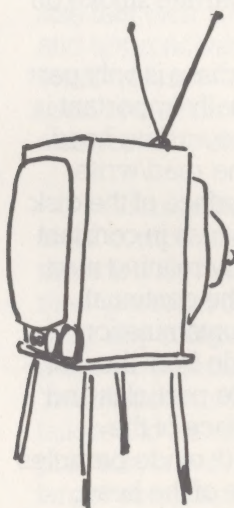
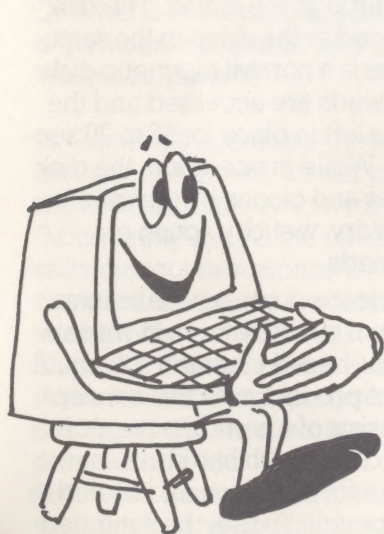
The *HANDS-ON MANUAL* and *SOFTWARE*, an ACADEMY option, takes you step-by-step through a variety of activities designed to increase your understanding and command of microcomputers.

The *NEWSLETTER* contains the latest news on technological developments as well as information about the ACADEMY.

The *CHOOSING EDUCATIONAL SOFTWARE* pamphlet describes the three types of educational software, as well as provides a form to help you review software used in the classroom.

Study hints:

- Arrange your time so that you can read an entire chapter at a single sitting. Instructional writing has a certain flow—a logical progression of thought—that can be lost if interrupted too often.
- Read the material actively. Keep a pencil on hand to underline striking or significant passages. Put question marks beside difficult or confusing passages that seem particularly important. If you wish, write short comments in the margins as you go.
- Read critically. You should exercise your ability to evaluate, as well as appreciate and understand, what you read. If you have questions about the material, discuss them with someone who can help.
- Finally, review your underlinings. Study closely those passages you consider difficult or confusing.





# How to Help Yourself

By Lewis A. Whitaker

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*From "Maintenance Alternatives for Personal Computers" by Lewis A. Whitaker, appearing in the June, 1983 issue of Byte magazine. Copyright © 1983 Byte Publications, Inc. Used with the permission of Byte Publications, Inc.*

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When you buy a computer, you should select a reliable repair service to which you have quick and easy access. However, you can take steps to maintain the components of your computer before a failure occurs. The following are some simple and effective steps that a personal-computer owner can take to care for his or her equipment.

**Central processor:** This is the "brain" of the computer and fortunately one of its most reliable parts. Because the average personal computer system draws power in the range of 3 to 5 amps, you should not overload the same circuit with other appliances. Overloading a circuit could result in power surges that could blow a fuse or cause unpredictable problems. A typical indication that a fuse has blown is that absolutely nothing happens when the power switch is turned on. If a fuse does blow, replace it with the size recommended by the manufacturer. If the fuses continue to blow, you must call the previously selected service company. Another problem that can affect the operation of the central processor is static electricity. Static electricity, that annoying and shocking "zzzap" so common indoors in winter, can cause data loss or even component failure. An antistatic mat or antistatic spray is an excellent investment to prevent such failures.

**Floppy-disk drive:** This peripheral device is the one most likely to fail outright or marginally, causing disruption of processing or actual loss of data. Fortunately, the disk drive is

also the peripheral that can benefit the most from careful maintenance. Often, the problem is with the floppy disk itself. You should use only top-quality, fully tested, "certified" disks. However, even use of the best disks cannot guarantee that problems will not occur. Magnetic disks require careful handling. The slightest bit of dust or oil between the recording head and the disk surface can cause improper contact. This can prevent data from being written on the disk and can interfere with reading data too. The following rules for floppy-disk care are industry standard. You would be wise to follow them carefully.

1. Do not put fingers, pencils, or other objects through the head-access slot in the vinyl jacket.
2. Keep disks away from large motors or other magnetic fields.
3. Do not bend, fold, or wrinkle the disk's vinyl jacket.
4. Do not write on the vinyl jacket.
5. Write on a label before affixing it to the jacket.
6. Keep the disk in its envelope when the disk is not in use.
7. Keep the disk and envelope in a protected storage area.
8. Keep disks in an area with a temperature range of 10° to 43°C.
9. Avoid getting cigarette smoke on the disks.

Caring for the disks is only part of the problem. Equally important is proper care of the recording head. During operation, the read/write head rides on the surface of the disk. When a ceramic head is in constant contact with a rapidly rotating magnetic disk, there is the continual potential for head contamination. This means that oxide from the disk is loosened in minute particles and smears onto the surface of the recording head. With oxide particles covering the surface of the head, magnetic signals can be neither recorded nor read. Until quite

recently, the only way to rid a disk head of contamination was to have a qualified engineer dismantle a drive and manually clean the head surface by gently and carefully scrubbing it with a cotton swab soaked in alcohol. This procedure was both time consuming and potentially dangerous to the drives. A number of head-cleaning devices are now available to the user who wants to do the cleaning himself. These head-cleaning kits, which are available for both 8- and 5 1/4-inch drives, are of three types:

- Dry cleaners consist of a package of one, two, or three disks per box. The disk is a piece of standard Mylar substrate with a nonabrasive polyester material bonded to it. It is sealed inside a standard vinyl jacket.
- Wet/dry cleaners typically consist of two cleaning disks and one bottle of cleaning solution. The cleaning disk is a slightly porous, flexible piece of nonwoven, nonabrasive polyester. It is sealed inside a modified jacket. One side of the jacket has a wide cutout, and the other side, a removable tab. (For single-sided drives, the tab stays in place; for dual-sided, the tab is removed.) The user applies cleaning solution to a third of the disk through the cutout. The disk is placed in the drive in the same way as is a normal magnetic disk. The heads are accessed and the disk is left in place for 15 to 20 seconds. While in operation, the disk rotates and cleans by means of a wet/dry, wet/dry action on the heads.
- Wet cleaners use a nonabrasive material totally saturated with an alcohol-based cleaning solvent. A recent product uses this concept. It consists of a nonabrasive, polyester disk which has been saturated with a solution and sealed in a foil pouch. To use, the saturated disk is removed from the pouch,



placed in a specially provided disk jacket, and then inserted in the drive. After allowing the disk to rotate under the head for 30 seconds, the jacket is removed from the drive and the used cleaning disk discarded.

**Printers:** Because a printer is an electromechanical device, it can often be the source of annoying maintenance problems. The computer printer is much like a typewriter. It functions well until a buildup of paper particles and household dust interferes with operation. The printer then requires an expensive, professional cleaning. Other than having a maintenance contract, all a user can do is keep the print mechanism free from accumulated ink and paper dust. Commercial cleaning kits are available for wiping contamination from the print elements. You should have a plastic cover to protect the printer when it is not in use.

## Conclusions

Although personal computers today are more compact and much more reliable than computers of 20 years ago, they are still a complex combination of electronic and mechanical components. Preventing problems is the best maintenance most personal-computer owners can perform. Cleaning kits are available for disk drives, printers, and video screens. Mats and sprays are available to prevent static electricity. Plastic covers are available to protect computers and peripherals from dust. Keeping your computer free of contamination and trouble is by far the least expensive of the maintenance methods available to personal computer users.

When preventive maintenance is not enough and you need professional help, be sure that you have thoroughly researched the available service options. The decision you make will affect not only your pocketbook but also your peace of mind.

## What is MECC?

The Minnesota Educational Computing Consortium is a public organization established by the State government to assist Minnesota schools and colleges implement educational computing. MECC was established in 1973 and began providing direct services to educators in 1974. Three types of services support the use of computers in instruction: 1) providing low-cost access to computing resources; 2) development of educational courseware; and 3) inservice training of educators. MECC's knowledge and expertise in the educational computing field comes from nearly a decade of working with and providing leadership for hundreds of local educators on a daily basis.

Contact MECC at 2520 Broadway Drive, St. Paul, Minnesota 55113-5199, 612-638-0600.

## We Get Questions...

And we do our best to provide answers through our special *ACADEMY hot lines* and in this column, a regular Newsletter feature. Here we'll respond to a selection of the general issues raised most frequently by those *ACADEMY* participants who have contacted their stations through letters or *hot line* calls.

**Q: What is the difference between a "personal computer" and a "microcomputer"?**

**A:** Generally speaking, there really isn't any difference; for our purposes, the two terms are synonymous. "Microcomputer" is the more technically correct description for any compact, inexpensive computer containing only one, or at most very few, chips. All the equipment dealt with in the *Bits and Bytes* programs and the *Hands-On Manuals* is microcomputing hardware. "Personal computer" is a marketing term used by the people who manufacture and sell microcomputers, perhaps to empha-

size that their products are "friendly" and approachable. The word "personal" refers to a computer that is used in the home, the office, or the classroom by *one person at a time*.

All microcomputers are personal computers; that is, they are intended for individual use and can meet personal objectives. Theoretically, any computer could be a personal computer—even a huge "mainframe" installation—if it were tailored to an individual's needs. In practice, however, most of these larger computers are designed to accommodate several programs with a variety of applications, which can

be accessed simultaneously from more than one terminal.

**Q: In Program 3 of Bits and Bytes, several people were interviewed at Computer Town, U.S.A. What exactly is Computer Town?**

**A:** The Computer Town you saw is a local volunteer organization that provides informal learning opportunities for those who are curious about computers but don't want to take formal courses on the subject. Computer Towns throughout the U.S. offer hardware, software, supplementary print materials, hands-on experience, and

(Continued on next page)



teacher/counsellors. They're found in libraries, museums, and community centers and provide a chance for lay people to become as computer literate as they want—at their own speed. People learn how to load and run pre-programmed software, and get a nodding acquaintance with computer programming and a basic understanding of how they can use the computer as a personal tool for education, recreation, and business.

The first Computer Town opened at Menlo Park, California, in 1980. This public-access computer-literacy project soon received wide acclaim for its informal atmosphere, enthusiastic leadership, and high success rate with people of assorted ages and backgrounds. It became the model for other Computer Towns, and eventually Computer Town International was formed to advise the 70 or so locations in the U.S. and abroad, and to provide information for anyone wanting to start a similar venture. The organization publishes a newsletter, offers consulting, technical support, and resource lists, and is developing a series of books on computer education for beginners. For further information, write or call Liza Loop, Technical Coordinator, Computer Town, U.S.A., Box E, Menlo Park, California 04025, U.S.A., (415) 323-3111.

**Q: Shopping for floppy disks, I've noticed they come in various "densities." Which density should I buy?**

**A:** First, let's clarify the terminology. Five-and-a-quarter-inch floppy disks come in three densities: single, double, and quad. The term "density" actually refers to two different capacities: *recording* density (the number of ferric oxide particles in the disk coating) and *track* density (measured in tracks per inch, or TPI).

Here's how the three levels of disk density break down according to each standard of measurement:

Disk Density	Recording Density	Track Density
<i>Single</i>	standard	48 TPI
<i>Double</i>	double	48 TPI
<i>Quad</i>	double	96 TPI

The disk density you require is determined by the capacity of your system—and, in particular, of your disk drive. In the following chart, disk-drive storage capacity is quoted "unformatted"—that is, without the format or map the computer uses to store and retrieve data. The "formatted" capacity is slightly lower, since the space taken up on the disk by the format reduces the room left over for data memory.

Unformatted Disk-Drive Storage Capacity	Disk Density Required
up to 125K	<i>Single</i>
125-250K	<i>Double</i>
250-480K	<i>Quad</i>

Choosing the right disk for your system is like choosing the right grade of gasoline for your car: just as certain engines require higher octane levels, certain disk drives require a higher disk density. You don't need any more than the minimum required by your system, and sometimes you can even get by with a lower grade than specified here. For instance, an Apple disk drive stores 143K unformatted, but single-density disks will work.

**Q: What is the difference between a hard disk and a floppy disk?**

**A:** First, let's quickly review some material covered in "Storing Information" (*Bits and Bytes* Program 4), and the related section of the *Resource Book*.

Computer programs and data can be stored either on tape or on disk. Disks are more expensive than

tapes, as is the hardware required to use them; also, most blank disks must be formatted before you can record on them. However, because the information on disks can be accessed randomly, as opposed to the sequential access of tape storage, disks are faster to use. They are also more compact, and less likely to suffer damage due to frequent use in schools and offices.

Microcomputers generally use floppy disks, rather than hard disks. These are flat and round, and now come in standard 5¼-, and 8-inch sizes. The physical size of the disk isn't a clue to its storage capacity. A 5¼-inch disk (sometimes called a "diskette") can hold from 60,000 to 1,000,000 or more bytes of information, while a larger one can hold more or less, the capacity of each depending on how it's formatted. The surface of the floppy disk is covered with a magnetic oxide coating on which programs and data are recorded, erased and re-recorded. For protection from dust and scratches, it is sealed in a square-shaped sheath. A hard disk looks more like the discus thrown by an athlete. Although it's coated with the same type of chemical, it can hold many times more information than a floppy disk. It also revolves at a much higher speed. Because they are extremely susceptible to damage from smoke and dust particles, hard disks are sealed into a disk-drive unit.

Hard disks are much more expensive than floppy disks, and while their capacity and speed are much greater, their usage is less flexible, since in most cases you cannot change disks within the sealed hard-disk drive. Generally, hard disks are used to store information that will not later be erased or replaced by new information. Because of their speed, capacity, and inflexibility, hard disks are the economical choice for only large, central mainframe computers, although they are becoming available for microcomputers. Floppy disks, which can be removed from the disk drive and stored in a library,



remain the more common and economical information storage medium for microcomputer users.

**Q:** I'm worried about the possible effect on health of VDTs and computers generally. Can you give me more information?

**A:** You're not alone. Unfortunately, at present there are more questions on the subject than there are definite answers. Many people are concerned about the effects of radiation from video display terminals (VDTs), especially on pregnant women and their unborn babies. No direct evidence has yet been found confirming the suspected hazards.

Among the complaints listed by those who spend long periods of time working at computer terminals are headaches, backaches, and eyestrain. Physical comfort, ease of movement, and frequent breaks should certainly be designed into any computerized working environment. Eyestrain, which can lead to actual eye damage and impaired vision, is certainly a significant threat to anyone who stares at a VDT for several hours every day. This is a problem that computer manufacturers are beginning to deal with. A relatively easy and inexpensive solution for those troubled by glare is to install a special polarized screen over the display tube. (Note that these screens don't protect you from radiation—their only purpose is to reduce eye fatigue caused by glare off the screen.) Proper room lighting and appropriate sound reduction around printers are among other precautions which should be taken for user comfort.

## Technological Update

### KOALA DRAWING PAD

You are an instant artist with the Koala pad touch tablet. It is a handheld electronic pad that plugs into your microcomputer and lets you draw directly on the screen with your finger.

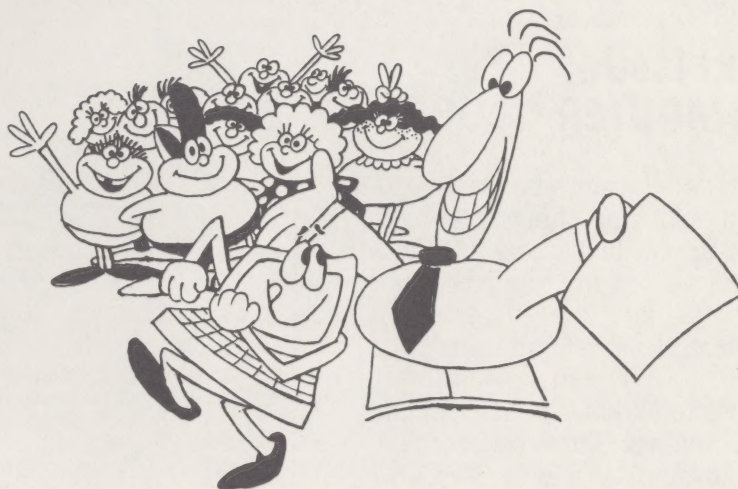
Koala comes with a software menu that lets you select shapes, shadings, brush strokes, and colors. As you use these elements to draw on the pad, images appear on the screen.

Koala Pad can be used with Koala software games as well. To play these games, students draw on the pad instead of operating a keyboard. This feature is particularly helpful for young children who can't use a keyboard well.

You can use the Koala Pad with Apple, Atari, IBM, and Commodore computers. Price: \$125. Contact: Koala Technologies Corp., 1800 Embarcadero Road, Palo Alto, CA 94303; 415-494-2030.

### Run your PET programs on the Commodore 64

Programs designed for the Commodore Pet can now be run on the Commodore 64, thanks to the *Commodore PET Emulator* software package and a manual called *Converting PET Programs for the Commodore 64*. To learn more, contact your local Commodore dealer.







## Broadcast Schedules

### KCET/Los Angeles, CA

Beginning the week of January 28  
on Saturdays at 12 noon and  
repeated Sundays at 9 a.m.

### KET/Kentucky Network

Beginning the week of January 22  
on Sundays at 10 p.m. Eastern Time and  
9 p.m. Central Time and repeated on  
Saturdays at 11 a.m. Eastern Time and  
10 a.m. Central Time.

### KPBS/San Diego, CA

Beginning the week of January 30 on  
Mondays at 6 p.m. and repeated  
Tuesdays at 11 p.m., Wednesdays  
at 12:30 p.m., and Saturdays at 8 a.m.

### NETN/Nebraska Network

Beginning the week of January 25 on  
Wednesdays at 10 p.m. and repeated  
Saturdays at 10 a.m. and Sundays  
at 10 a.m.

### WGTE/Toledo, OH

Beginning the week of January 24 on  
Tuesdays at 3 p.m. and repeated Wednesdays  
at 12 noon, Thursdays at 3:30 p.m.,  
Saturdays at 9:30 a.m. and Sundays at 11 a.m.

### WHA/Madison, WI

Beginning the week of January 24 on  
Tuesdays at 8:30 p.m. and repeated  
Saturdays at 2 p.m.

### WMHT/Schenectady, NY

Beginning the week of January 26 on  
Thursdays at 10:30 p.m. and  
repeated Saturdays at 8:30 a.m.

### WNED/Buffalo, NY

Beginning the week of January 28  
on Saturdays at 10 a.m. and 5:30 p.m.  
and repeated Tuesdays at 12 noon.

### WNET/New York, NY

Beginning the week of January 26 on  
Thursdays at 8:30 p.m. and repeated  
Saturdays at 1:30 p.m. and Mondays  
at 12:30 p.m.

### WXXI/Rochester, NY

Beginning the week of January 23 on  
Mondays at 2:30 p.m. and repeated on  
Thursdays at 12 noon and 9:30 p.m. and  
Saturdays at 9:30 a.m.

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## Next Issue: COMPUTER CLUBS

Computer clubs are being set up all over the country. There is probably one near you. In the next ACADEMY Newsletter you will read about how computer clubs work, where they are located and how you can join one. In the meantime, please read the article, "What Can You Get Out of a Computer Club?" by Loretta Holz in your ACADEMY ON COMPUTERS RESOURCE BOOK, Section II, Home User's Guide.

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# ACADEMY ON COMPUTERS

WNET/THIRTEEN 356 West 58 Street New York, NY 10019

A 12-part television series  
Study materials and  
computer software  
A computer-managed  
learning system

CORRECTION \* CORRECTION \* CORRECTION \* CORRECTION

To: KPBS TV15/San Diego ACADEMY ON COMPUTERS Registrants  
From: ACADEMY ON COMPUTERS Team

Please be advised that the start date for the  
KPBS TV15 broadcast of BITS & BYTES is Monday,  
January 23, 1984, not January 30, as stated in the  
ACADEMY ON COMPUTERS Newsletter # 1.

The KPBS TV15 BITS & BYTES broadcast schedule  
is as follows:

Mondays	6:00 p.m.
Repeated: Tuesdays	11:00 p.m.
Wednesdays	12:30 p.m.
Saturdays	8:00 a.m.

Sorry for the confusion.

We hope you enjoy the ACADEMY ON COMPUTERS!